2019

The relationship between volunteerism, personality, and psychological well-being among oldest old adults

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by

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A thesis submitted to the graduate faculty

in partial fulfillment of the requirements for the degree of

MASTER OF SCIENCE

Major: Gerontology

Program of Study Committee:
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Iowa State University

Ames, Iowa

2019

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ABSTRACT

Volunteering has positive effects for older adults on many aspects of well-being, especially on their psychological well-being. Personality can play an important role as a psychological resource which may motivate or select older adults to participate in volunteering. Thus, it is important to assess the role of volunteering and personality in older adults' life satisfaction. However, there has been a lack of studies which explore the relationship between volunteerism, personality, and life satisfaction among the oldest old population. In addition, there are no studies in the existing literature exploring such relationship from the life-span perspective. Applying the volunteer personality model, the current study examined three hypothesized effects: direct effects of personality and volunteering on life satisfaction, indirect effects of personality on life satisfaction mediated by volunteering, and moderation effects of volunteerism and personality on life satisfaction among octogenarians and centenarians. Data of 208 oldest old adults from the Georgia Centenarian Study were included in the present study. For volunteering measures, three different forms of volunteerism were used: "ever volunteered," "last volunteered," and "currently volunteering." The results suggest that there are significant age differences in last volunteered and currently volunteering, indicating that the majority of centenarians last volunteered when they were 81 to 99 years of age, whereas most of the octogenarians volunteered "even today." There were no significant gender and ethnicity differences in all types of volunteering. Findings from the direct effects model revealed that extraversion and competence were directly and positively associated with the level of life satisfaction, indicating that those with higher levels of extraversion and competence had higher levels of life satisfaction. Neuroticism significantly predicted the time point when older adults last volunteered, indicating that those with higher levels of neuroticism were more likely to have volunteered up to the age of the 80s and 90s. In addition, participants with more educational

attainment were more likely to volunteer up to the age of the 80s and 90s. There were no mediation and moderation effects of personality factors or volunteerism when using “ever volunteered” and “last volunteered” measures on the level of life satisfaction for octogenarians and centenarians. However, there were significant moderation effects of currently volunteering by extraversion on life satisfaction, indicating that not currently volunteering was associated with lower levels of life satisfaction among oldest old adults. Future studies may need to address the limitations of the current study in order to better understand the relationship between volunteerism over the life span, personality and life satisfaction among octogenarians and centenarians.

CHAPTER 1. INTRODUCTION

Volunteerism has positive effects not only for those who are helped, but also for the helpers. Such positive effects include life-satisfaction, self-esteem, self-rated health, and functional ability (Wilson, 2000). Also, a longitudinal study with older people over 70 years of age showed that frequent volunteering had a significant effect on delaying mortality (Harris & Thoresen, 2005). Volunteerism is defined as "long-term, planned, prosocial behaviors that benefit strangers and occur within an organizational setting" (Penner, 2002, p.448). Volunteerism, also known as civic engagement, is "the activity reflecting of an underlying quality of social connectedness that may manifest itself in many ways: through work or social life, formal community service or informal helping, secular civic engagement or faith-based good works" (Center Health Communication, 2004, p.15).

Volunteering prompts positive well-being of older adults including physical and psychological well-being (Morrow-Howell, 2010). Volunteering protects older adults from poor psychological well-being by experiencing more role changes associated with retirement, widowhood, and loss of other roles within society (Greenfield & Marks, 2004). Furthermore, taking a vantage point of socioemotional selectivity theory (Carstensen, Fung & Charles, 2003), older adults find greater satisfaction, needs, and psychological/emotional well-being from meaningful relationships and providing assistance to those of close, significant social network (Windsor, Anstey, & Rodgers, 2008). In this sense, volunteerism seems to fulfill two main elements of engagement with life that the model of successful aging and the proposition of activity theory (Knapp, 1977) suggest. The Center for Health Communication (2004) also pointed out that the growing population of older adults, their increased longevity, and decreased fertility rate lead to limited opportunities and resources of participating in service or community

activities for the baby boomer generation, although they will have healthier and more productive later lives compared to the generation before them.

Although older adults show a growing interest in volunteer and productive activities, Martinson and Minkler (2006) took a critical perspective on the issue of considering volunteering as an ideal activity that promotes well-being for all older adults, proposing that "society devalues the worth of those older people who cannot or choose not to engage in such activity (p. 322)." Martinson and Minkler criticized that emphasizing volunteering and civic engagement as ideal activities, which older people should follow, may not apply to a group of people who are frail or not wanting to be part of volunteering. Furthermore, the benefits coming from volunteering in late life may not be applied to those who wish not to participate in volunteering, civic engagement, or social engagement, considering the fact that older individuals with more resources (e.g., human and social capital) are selected to participate in volunteering with opportunities given to them (Martinson & Minkler, 2006; Morrow-Howell, 2010). Employing this perspective, this thesis explored whether benefits coming from volunteerism in late life for life satisfaction differ by personality traits and examined whether personality traits serve as individual resources for older individuals who participate in volunteering.

Personality traits have been established as predictors of psychological well-being and in relationship to longevity (Friedman, Kern, & Reynolds, 2010; Martin, da Rosa, Siegler, Davey, MacDonald, & Poon, 2006; Masui, Gondo, Inagaki & Hirose, 2006; Smith & Ryan, 2016). Among oldest old populations, conscientiousness has been consistently related to well-being. In addition, the personality of individuals may enable older adults to participate in volunteering. In general, the literature links extraversion and agreeableness to volunteerism of older adults (Carlo et al., 2005; Ozer & Benet-Martinez, 2006). According to the model of volunteer personality by

Thoits and Hewitt (2001), an individual can have a specific personality that acts as a determinant or a facilitator of volunteering. Prosocial personality is one example of a volunteer personality. People with a prosocial personality compared to those without a prosocial personality are more likely to have empathy toward others, which encourages people to participate in volunteerism (Penner et al., 1992). Thoits and Hewitt (2001) did not include components of the five factor model in their volunteer personality model. Big Five factors consist of neuroticism, extraversion, openness to experience, agreeableness, and conscientiousness. (Costa, 1991; Goldberg, 1990; Roccas, Sagiv, Schwartz & Knafo, 2002). This study explored the role of the Big Five factors related to volunteerism and well-being of older adults.

Taken together, volunteering has positive effects for older adults in physical and psychological well-being, and personality can act as a determinant of volunteering. In this study, I ask three research questions: what are the direct, indirect, and moderation effects of personality and volunteering on centenarians' life satisfaction. For the direct effects, I hypothesized that both personality and volunteering would have a significant effect on life satisfaction. To be specific regarding personality traits, higher levels of extraversion, agreeableness, conscientiousness, and openness were hypothesized to be positively associated with higher levels of life satisfaction, whereas high levels of neuroticism would be negatively associated with life satisfaction. In addition, those who had volunteered longer over the life span were hypothesized to show higher levels of life satisfaction. For the indirect effects, I hypothesized that volunteerism would positively mediate between extraversion, openness, agreeableness, conscientiousness and life satisfaction. Regarding the moderation effect, I hypothesized that the relationship between volunteering and life satisfaction would only be significant for extraverted, open, agreeable, conscientious, and emotionally stable personality. Most importantly, I used three different types

of volunteering for the current study in order to gain a deeper understanding of volunteerism from a life span perspective by including “ever volunteered,” “last volunteered,” and “currently volunteering.” The present study examined the relationship between volunteerism, personality, and life satisfaction to provide important pieces of information that fills the gap of the literature – understanding the role of volunteerism from a life span perspective and the role of personality on life satisfaction among octogenarians and centenarians.

CHAPTER 2. LITERATURE REVIEW

A number of studies have assessed the relationship between volunteer activity and well-being of older adults. Volunteering has a positive effect on volunteers' psychological well-being (Greenfield & Marks, 2004; Morrow-Howell, 2010; Wilson, 2000). However, there are no studies including centenarians as participants or exploring the volunteering variable from a life-span perspective. How long did centenarians volunteer over their life time? Which personality trait is related to the duration of volunteering for centenarians? These questions have remained unexplored in studies on volunteering among oldest old adults. The main research question this study addresses is concerning the role of volunteering experiences, either proximal or distal, on life satisfaction among oldest old adults and whether personality differentially exerts an effect in the association between volunteering with life satisfaction. Another theme of this study is to uncover the importance of volunteerism from a life span perspective. The following literature review covers psychological well-being among oldest old adults, their personality, the links between psychological well-being and personality, volunteerism among centenarians, and two theories—resilient personality theory and prosocial personality theory—that have been used in studies examining the relationship between volunteering and personality. The literature will finish with a brief evaluation of volunteering over the life span.

Life Satisfaction Among Oldest Old Adults

Smith, Borchelt, Maier, and Jopp (2002) suggested that health or well-being should be differently conceptualized for the oldest old population, the population over age 85. The oldest old population has higher levels of comorbidity and is more likely to consume medical services compared to young old adults (Smith et al., 2002). It is important to consider what is different about centenarians when compared to younger old adults. There is clear evidence showing that

subjective or psychological well-being is related to reduced risk to mortality, leading to longevity (Diener & Chan, 2011).

Life satisfaction is a representative component measuring subjective or psychological well-being in late adulthood (Smith, Borchelt, Maier & Jopp, 2002). Berg, Hassing, McClearn, and Johansson (2009) examined predictors of life satisfaction among oldest old adults including questions about demographics, depression, locus of control, cognitive function, functional capacity, self-rated health, and social network. The results of their study revealed that self-rated health and depressive symptoms were associated with life satisfaction among oldest old women, and the lower level of life satisfaction among men was significantly related to widowhood (Berg et al., 2005). Bishop, Martin, and Poon (2005) conducted a study examining how health impairment, social position, and social support are associated with life satisfaction among oldest old adults from the Georgia Centenarian Study. Their finding supported the notion that social position and social support indirectly predicted life satisfaction, mediated through health impairment. Volunteering is also significantly associated with life satisfaction of older adults. Willigen (2000) assessed the long-term effect of volunteering on older adults' life satisfaction and reported that volunteering brought about positive changes in life satisfaction for older adults. This positive effect of volunteering had a greater effect on older adults than on younger adults.

Volunteerism and Older Adults

Knowing that volunteering has positive effects on older adults' health and well-being, it is also important to better understand what makes volunteers participate in volunteering activities and who are more likely to volunteer. At any point in life, about 70% of adults report volunteering, and the rate of volunteering increases with age until middle age (31%) then decreases at older ages (24%, Curtis, Grabb, & Baer, 1992; Morrow-Howell, 2010; Van

Willigen, 2000). According to the U.S. Bureau of Labor Statistics (2015), 62 million people volunteered at least once a year. These data did not include informal volunteerism. Among the population of volunteers, older adults who are 65 years and older spent more hours in volunteerism compared to the younger population. The median annual hours for older adults volunteering was 94 hours, whereas the younger population spent less than 60 hours volunteering in a given year (U.S. Bureau of Labor Statistics, 2015). This indicates that older adults spend more time in volunteerism even though the rate of volunteerism is lower compared to middle age adults. One explanation for the lower rate of volunteering of older adults compared to middle-age adults may be due to differences in contexts. Older adults who retired are less likely to have connections with educational and work institutions, which are major sources of volunteerism (Morrow-Howell, 2010).

There are several factors which are related to volunteerism, but not necessarily limited to older population. Educational attainment, or namely socioeconomic resources, has been most consistently linked to volunteerism (Kim & Hong, 1998; Wilson, 2000). Those who are educated are more likely to be asked to participate in volunteerism because they are more likely to be involved in more organizations (Wilson, 2000). Health status is related to volunteerism. Many studies suggest that volunteerism has positive effects on both physical and mental well-being, such as fewer depressive symptoms, improving mortality rates, and slowing the decline in self-reports on health (Lum & Lightfoot, 2005; Moen et al., 1993; Musick & Wilson, 2003; Thoits & Hewitt, 2001). Women compared to men are more likely to place higher values and motivations that predict prosocial behavior, which leads to volunteering (Einolf, 2011). Likewise, having empathic and prosocial dispositions are associated with engagement in volunteering as well (Mitani, 2014; Penner & Finkelstein, 1998).

The reasons or motivations of volunteering among older and younger adults are different. Younger adults generally volunteer to gain knowledge and skills that are helpful for their careers, whereas older adults are more likely to volunteer because they want to help others and remain active (Morrow-Howell, 2010; Okun & Schultz, 2003). Okun and Schultz's (2003) study revealed that the goal of volunteering shifts with advancing age, older adults volunteer to maintain emotional well-being. In addition, people expect to have more free time after retirement that they can spend in engaging in leisure activities. However, retired older adults wish to stay active and productive, which leads to valuing volunteering as an important part of their lives after retirement (Musick & Wilson, 2008). A Japanese longitudinal study also revealed that those engaged in social participation after retirement experienced fewer changes in their mental health during the transition into retirement (Shiba, Kondo, Kondo, & Kawachi, 2017).

When centenarians reminisce on and evaluate their lives, their most recent past is likely to involve volunteerism because the life span trajectory typically leads older adults to volunteerism following retirement. For that reason, volunteerism provides more opportunities of influencing centenarians' subjective well-being than their occupational experiences. It is, thus, important to examine the effect of volunteerism on longevity and well-being of centenarians.

Volunteerism Among Centenarians

How would volunteering affect the oldest-old population, including centenarians? Few studies have been conducted about volunteering among centenarians. Findings from the Georgia Centenarian Study (GCS) demonstrated that volunteering as a part of an engaged lifestyle is important for centenarians (Baek, Martin, Siegler, Davey & Poon, 2016; Martin et al., 2009). Using the Big Five personality traits associated with components of successful aging, Baek et al. found that high extraversion, high openness to experience, high agreeableness, and high

conscientiousness were associated with engaging in volunteerism. Martin et al. (2009) also assessed engaged lifestyle activities of centenarians using the GCS. The findings showed that personality traits (e.g., high levels of emotional stability, extraversion, openness, and conscientiousness) moderated the relationships between engaged lifestyle (e.g., volunteering, traveling, and public speaking) and mental status (e.g., Mini-Mental Status Examination). Overall, the results from the GCS suggest that high levels of extraversion, openness, conscientiousness, and agreeableness are associated with an engaged lifestyle. Knowing that personality traits moderated the relationship between engaged lifestyle and cognitive functioning, how would personality traits play a role in the relationship between volunteerism and psychological well-being? This study attempted to answer this question.

Personality of Centenarians

What are some psychological reserves of centenarians that enable them to survive to 100? Personality traits are the indicators of psychological vitality in late adulthood facilitating psychological well-being (Smith & Ryan, 2016). There is clear evidence demonstrating that certain personality characteristics are related to longevity (Friedman, Kern, & Reynolds, 2010; Martin, da Rosa, Siegler, Davey, MacDonald, & Poon, 2006; Masui, Gondo, Inagaki & Hirose, 2006).

Conscientiousness has been consistently related to longevity and better health of older adults (Roberts, Kuncel, Shiner, Caspi, & Goldberg, 2007). Among oldest old adults, specifically centenarians, several studies (e.g., Smith & Ryan, 2016) have found that their personality traits are mainly characterized by high levels of conscientiousness and low levels of neuroticism with moderate levels of extraversion and agreeableness. Compared to younger old adults, centenarians have higher levels of openness, conscientiousness, and extraversion (Masui et al., 2006). Masui

et al. also suggested for a Japanese centenarian study that specific personality traits related to longevity may be associated with health-related behaviors, stress reduction, and adaptation to problems for centenarians.

However, not all centenarians universally share the same personality traits. A centenarian research project from Australia revealed that Australian centenarians were low in extraversion and openness and high in neuroticism (Law, Richmond, and Kay-Lambkin, 2014). This study also implied that personality traits of individuals may not remain the same over time but change with life circumstances as they aged. Law et al. pointed out that current personality traits of centenarians may not be relevant as possible contributors of longevity, but their personality traits in the past may be more important. Baek et al. (2016), on the other hand, suggested that certain personality traits of centenarians were significantly associated with successful aging. Using the Big Five personality traits, the findings by Baek et al. supported the notion that centenarians who were low in neuroticism and high in extraversion, agreeableness, openness, and conscientiousness were significantly more likely to have higher levels of the four components of successful aging, which included cognitive functioning, engaged lifestyle, activities of daily living, and subjective health.

In summary, studies about personality traits of oldest old adults and their association with well-being show that conscientiousness has consistently been established to relate to longevity and health-related behaviors of older adults. Despite some inconsistent findings across the world, evidence suggests that low scores on neuroticism and high scores on extraversion, agreeableness, openness, and conscientiousness contribute to successful aging of oldest old adults.

Theoretical Framework

Thoits and Hewitt (2001) combined and explained four major determinants of volunteering, which are volunteer motivations, values and attitudes, role-identity, and the volunteer personality. Their model suggests that people are selected into the group of volunteers by having specific resources. In the proposed study, I use the volunteer personality model as my overarching theoretical framework which specifically states that "personality or dispositional variables motivate volunteer work" (Penner & Finkelstein, 1998; Thoits & Hewitt, 2001). For example, the "prosocial personality" was introduced as a volunteer personality which predicted longer volunteering commitment (Penner & Finkelstein, 1998). In addition, Allen and Rushton (1983) revealed that volunteers characteristically have an internal locus of control, high self-esteem, and high levels of emotional stability. The volunteer personality model supports the notion that people who have greater psychological resources, such as a prosocial personality, are more likely to volunteer.

Personality and Volunteerism

A number of studies have demonstrated that there are relationships between personality and motives that lead individuals to volunteer. Personality traits that are related to positive emotions, social skills, and emotional regulation are more prominent in volunteers than non-volunteers (Matsuba et al., 2007). However, the literature that links personality traits to volunteering has rarely used the Big Five factors of personality, but has applied differently categorized or organized personality traits such as resilient and prosocial personality.

Resilient personality theory. Resilient personality, which is composed of three types of personality, can explain which specific personality trait is linked to volunteerism. Even though the participants of their study were children and adolescents, Atkins et al. (2005) assessed the

association between personality types during childhood and volunteering during early and mid-adolescence, using three categories of personality: resilient, overcontrolled and undercontrolled. Resilient adolescents were high in emotional regulation with inclination towards positive emotionality, whereas undercontrolled and overcontrolled individuals were low in emotional regulation skills. Undercontrolled adolescents had difficulty in social interactions because of externalizing behaviors, and overcontrolled adolescents were shy and anxious about social interactions (Atkins et al., 2005). Atkins et al. found that resilient personality types were more likely to volunteer than the other two types of personality. One notable finding from the study proposed that "personality type led to volunteering, rather than participation in volunteering shaping personality type" (Atkins, Hart & Donnelly, 2005, p. 157). This elucidated the direction of the relationship between personality and volunteerism: certain personality types lead to volunteering, not the other way around.

Prosocial personality theory. Penner et al. (1995) introduced a personality trait that is highly related to prosocial behavior, "prosocial personality," which consists of core personality characteristics that form prosocial behavior: other-oriented empathy and helpfulness. A highly other-oriented empathetic person would tend to care about others' welfare and have empathy towards others, whereas a person with high helpfulness would have a history of engaging in helping actions (Penner et al., 1995). Sha and Rizvi (2016) conducted a review of studies examining the relationship between prosocial behavior and the Big Five factor model of personality covering fifteen years. Their review concluded that the personality traits of agreeableness and extraversion best explained prosocial personality (Sha & Rizvi, 2016).

"Research has demonstrated that personality traits indeed help distinguish between volunteers and non-volunteers" (Hustinx, Cnaan, & Handy, 2010, p.418). In order to assess the

relationships between prosocial behavior/volunteerism and personality traits, Carlo et al. (2005) examined the interplay of traits and motives and how prosocial behavior among college students is enhanced by them. They used the Big Five factors of personality traits testing the model of agreeableness, extraversion, and prosocial value motives predicting volunteerism. This study revealed that extraversion and agreeableness jointly predicted prosocial value motives, which in turn strongly predicted volunteer behavior compared to conscientiousness, neuroticism, and openness to experience (Carlo et al., 2005). Agreeableness and extraversion predicted community involvement, prosocial behavior, and volunteerism (Ozer & Benet-Martinez, 2006). The strongest predictor of volunteering, agreeableness, had a significant direct effect on volunteering with the possible explanation that people who are agreeable may positively comply with others' request to assist with volunteering (Carlo et al., 2005). Such evidence from the literature suggests that only certain personality types, such as agreeableness and extraversion, are linked to volunteerism.

Applying the supportive findings to older populations, as personality traits do not alter completely but stabilize over the life course (Caspi et al., 1999), I hypothesize that agreeableness and extraversion are personality traits linked to volunteerism. Furthermore, those who are agreeable and extraverted are more likely to be selected into groups who benefit from volunteering.

Volunteering over the Life Span

Thoits and Hewitt (2001) asked questions about dynamics of volunteers, pointing out that most studies on volunteering have not focused on the differences among volunteers and non-volunteers, when are the transitions of beginning and terminating volunteering, and the duration of volunteering. It is important to assess life-span activities of volunteers in a broader context,

instead of just focusing on current volunteering status. There is evidence that individuals who engage in more hours of volunteering report better well-being than those who do not volunteer as much (Morrow-Howell, Jim, Philip, & Fengyan, 2003). However, no studies have asked questions about the timing of volunteering throughout an older adult's lifetime. It is not clear whether distal volunteering continues to influence one's well-being in later life. More attention is needed to assess the timing effect of volunteering over the lifetime, and if the positive effect of volunteering lasts only when it occurs presently or even over several decades.

In order to examine the timing effect of volunteering from a life span perspective, it is important to ask when older adults last volunteered during their life span. Are there any age, gender, or ethnicity differences in volunteering and well-being for older adults who had ever volunteered at any time point in their life? In the current study, I aimed to explore volunteerism from the life span perspective, introducing three different concepts on volunteerism: "ever volunteered," "last volunteered" and "currently volunteering." "Ever volunteered" explores whether an individual had ever volunteered. "Last volunteered" examines when an individual volunteered last. Volunteering at a later time point can have two different meanings. The person had volunteered for a long time until the time point they last volunteered, or the person started volunteering at a later time point in the life span, after retirement for example. "Currently volunteering" assesses whether a person is currently volunteering or not. I use these three terms throughout this study.

In this study, I propose three different models in order to examine the relationships among volunteerism, personality, and psychological well-being. A direct effect model of volunteering and personality on life satisfaction was assessed in order to examine which personality factor would predict psychological well-being. An indirect effect model was also

tested to examine the effect of personality on psychological well-being via volunteering, suggesting that personality factors are not directly predicting psychological well-being, but through volunteering. As noted by Penner et al. (2005), individuals with dispositional or internal variables are selected into a volunteer group, which in turn entails better mental health or psychological well-being through volunteering. Combined with evidence from studies which used the Big Five factors (Carlo et al., 2005; Ozer & Benet-Martinez, 2006; Sha & Rizvi, 2016), older adults with higher levels in extraversion and agreeableness are more likely to volunteer and benefit from volunteering affecting their psychological well-being.

Finally, to my knowledge moderation effects of the Big Five factors on the relationship between volunteerism from a life span perspective and psychological well-being have not been explored yet. However, the closest study was conducted by Martin et al. (2009) that tested the moderation effect of personality and volunteerism (as part of an "engaged lifestyle") on mental health. The current study alternatively tested the moderation effect of personality on the relationship between volunteerism and life satisfaction to assess whether high extraversion, agreeableness, conscientiousness, and openness operate as moderators on the association between volunteerism and life satisfaction. I proposed the following hypotheses for each model, based on the evidence from the literature.

(1) Extraversion, openness, agreeableness, conscientiousness and volunteerism have a positive direct effect on life satisfaction, whereas neuroticism is negatively related to life satisfaction. Figure 1 displays the hypothesized model. This model examines whether personality and volunteerism significantly predict life satisfaction.

(2) Volunteerism mediates the association between personality and life satisfaction. Volunteerism positively mediates the association of extraversion, openness, agreeableness, and

conscientiousness with life satisfaction. Neuroticism has a negative association with volunteerism as a mediator between neuroticism and life satisfaction. Figure 2 shows the model. By adding volunteerism as a mediator, the model is testing whether the effect of personality on life satisfaction is explained by volunteerism.

(3) Personality moderates the association between volunteerism and life satisfaction. The relationship between volunteering and life satisfaction is only significant for extraverted, open, agreeable, conscientious, and emotionally stable personality traits. Figure 3 depicts the model used in this proposed study.

Figure 4 delineates a combined model, which includes a direct, an indirect, and a moderation effect into one model. The combined model was included to demonstrate that the models are not distinct.

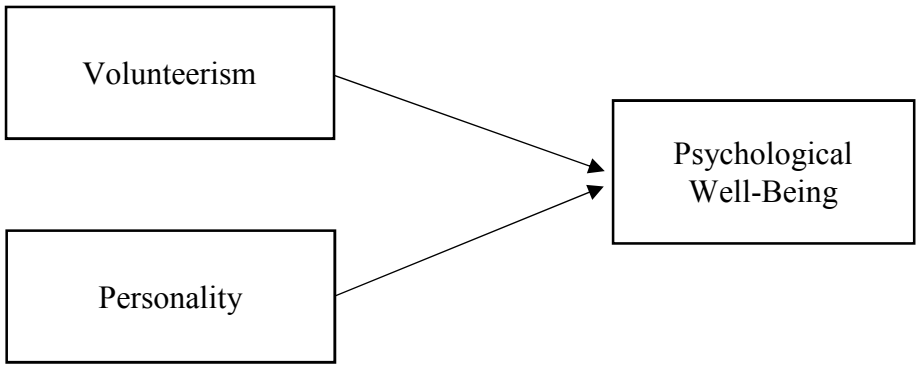


Figure 1. *Direct effect - personality and volunteerism have a direct effect on psychological well-being.*

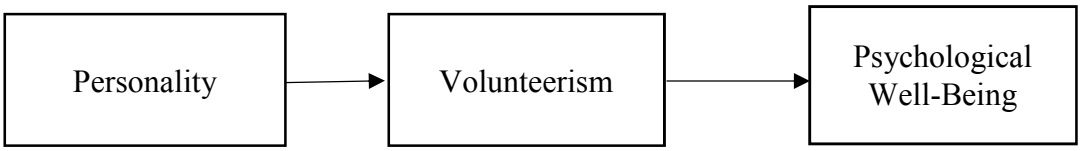


Figure 2. *Indirect effect - volunteerism mediates the relationship between personality and psychological well-being.*

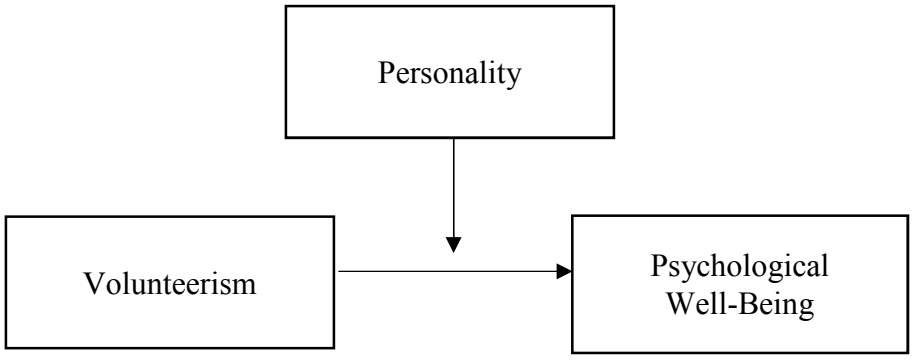


Figure 3. *Moderated effect - personality moderates the relationship between volunteerism and psychological well-being.*

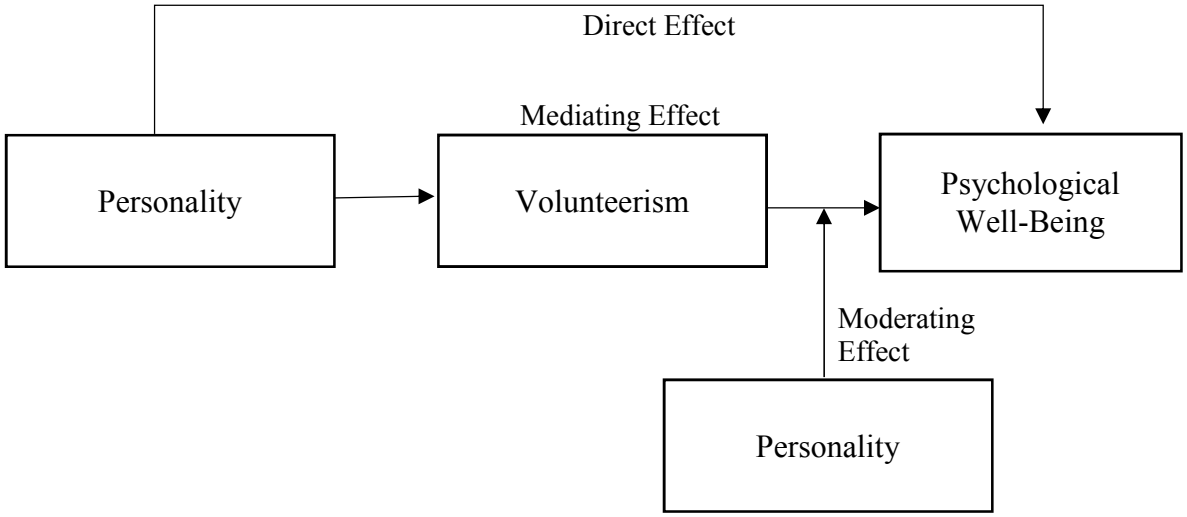


Figure 4. *Combined model of direct, mediating, and moderating effects.*

CHAPTER 3. METHODS

Participants

The participants were part of the Georgia Centenarian Study (GCS). IRB was obtained for the study (see Appendix). Among the three phases of the study, the centenarian data from phase 3 (2001-2009) were used, which contains the items of engaged life style (adapted from the Victoria Longitudinal Study), a short form of the NEO personality inventory, and life satisfaction. As demonstrated in Table 1, 55 participants were male (26.4%) and 153 were female (73.6%) among 208 participants. The age of the participants ranged from 80 to 108 with mean age of 94.4. There were 71 octogenarian (34.1%) and 137 centenarians (65.9%) among participants. Among two racial/ethnic groups in the GCS, 173 of the participants were White or Caucasian (83.2%) and 35 were Black or African American (16.8%). Total years of education ranged from 0 to 22 years, and the mean of the total years of education was 12.5 years. Cognitive functioning of participants was examined by the Mini Mental Examination Status (MMSE) which ranged from 0 to 30. Only those who scored at least 17 on the MMSE were included in the current study. The mean score of the MMSE was 24.9. To address missing data, I first imputed the data with individual mean replacement using SPSS, in which I created mean scores for each individual's personality trait and life satisfaction items. Then, full information maximum likelihood was used to estimate models using M*plus*.

Measures

Volunteerism

In the GCS data, engaged life style data among older adults were collected. There were two items assessing older adults' volunteer work. The first one asked if older adults had ever engaged in volunteer work (0=*no* and 1=*yes*), and another item asked if the participants did

volunteer and when did they volunteer (1=*never*, 2=*up to age 30*, 3=*age 30 to 64*, 4= *age 65 to 80*, 5= *age 81 to 90*, 6= *age 91 to 99*, and 7= *even today*).

Table 1

Descriptive Statistics of Demographic Variables

	N	Frequency (*M*)	Minimum	Maximum	*SD*
Gender	208				
Male	55	26.4%			
Female	153	73.6%			
Race/Ethnicity	208				
White/Caucasian	173	83.2%			
Black/African American	35	16.8%			
Age in years	208	94.4	80.5	108.6	7.64
Total years of education	204	12.5	0	22	3.64
Total	208				

In order to assess how volunteering activity relates to psychological well-being and personality, the binary variable of volunteer work was used (Son & Wilson, 2012). In addition, the categorical variable of volunteer work assessed older adults' volunteer work over the life span, for the purpose of examining the effect of volunteer work on the level of life satisfaction. The variable was recoded into two different ways. When exploring "last volunteered," the categorical variable was recoded in order to track the most recent time of one's volunteer work (0 = *never*, 1 = *age 30 to 64*, 2 = *age 65 to 80*, 3 = *age 81 to 99*, 4 = *even today*). There were no participants responding that they volunteered "*up to age 30,*" so this category was not included in

the recoded variable. A higher score of the "last volunteered" indicates having volunteered more recently. Only one person missed answering the binary variable. The missing data for the categorical variable of volunteerism was 2.4 percent, (i.e., five persons had missing data on this scale). The categorical variable was then recoded in order to assess "currently volunteering" (0 = *not currently volunteering*, 1 = *currently volunteering/even today*), by dichotomizing the categorical variable. No volunteering experiences or any volunteering experiences in the past were recoded as "*not currently volunteering*," and "*volunteering even today*" was recoded as "*currently volunteering*."

Big Five Factors of Personality

This study assessed the Big Five Factors of personality using neuroticism and extraversion from the NEO-FFI personality inventory (NEO-FFI; Costa & McCrae, 1992). Items were scaled on a 3-point Likert scales (-1 = *disagree*, 0 = *in-between/neutral*, 1 = *agree*). In addition, several NEO personality facets were included to measure specific facets of openness to experience, agreeableness, and conscientiousness. The facet of "trust" of the NEO personality inventory was used for agreeableness, "competence" was used as a measure of conscientiousness, and "ideas" was used as a measure of openness of the Big Five Factors of personality (Martin et al., 2006). The internal consistency of neuroticism was $\alpha = .83$, $\alpha = .61$ for extraversion, $\alpha = .75$ for ideas, $\alpha = .61$ for trust, and $\alpha = .65$ for competence. Higher scores indicate higher levels for each personality trait. Sample items for neuroticism and extraversion were, "I am not a worrier" and "I like to have a lot of people around me," respectively. The sample item for ideas included, "I have a wide range of intellectual interests," the sample item for trust was, "I am honest and trustworthy," and "I am a very competent person" was a sample item for competence.

The missing data for extraversion ranged from 0 to 3.4 percent, and 0 to 7 persons missed items on this scale. There were 0 to 1.9 percent of missing data for neuroticism and 0 to 4 persons had missing data for neuroticism. There were 0 to 3.8 percent of missing data for trust, and 0 to 8 persons had missing data on this scale. The missing data for competence ranged from 1.9 to 10.1 percent, and 4 to 21 participants had missing data on the scale. Lastly, there were 5.3 to 8.7 percent of missing data for ideas, and 8 to 18 persons had missing data on this scale.

Life Satisfaction

The Life Satisfaction Index (Neugarten, Havighurst, & Tobin, 1961) was used as a measure of psychological well-being. The GCS included six items with a 3-point Likert scale on life satisfaction (-1=*disagree*, 0=*uncertain*, and 1=*agree*). Sample items of the Life Satisfaction Index included: "These are the best years of my life," and "I am just as happy now as when I was younger." The item, "My life could be happier than it is now," was recoded for the summary score. Higher scores indicate higher level of life satisfaction. The internal reliability score of life satisfaction was $\alpha = .61$. The missing data for the life satisfaction scale ranged from 1 to 2.4 percent, and 2 to 5 persons missed the items on this scale.

Covariates

Gender, ethnicity, age, and educational attainment were be included in all analyses as covariates.

Analyses

As a first step of the analyses, I computed analyses for all variables to summarize the means and standard deviations of age, gender, ethnicity, and educational attainment. Crosstabulations with χ^2 tests were conducted in order to compare frequencies. Then, mean comparisons on age, gender, and ethnicity were analyzed by analysis of variances. In these

analyses, both the dichotomous variable and the continuous volunteering variable were used. As a next step, correlations for all variables were conducted in order to assess associations among variables. For these analyses, SPSS was be used.

For examining the direct, indirect, and the moderation effects, the M*plus* statistics program (Muthen & Muthen, 1998-2012) was used. First, for the direct effect analysis, I tested a model evaluating the association of extraversion, agreeableness, conscientiousness, openness, neuroticism, and volunteering with life satisfaction, including covariates. For the mediation analysis, I evaluated each personality trait as predictors of volunteering, and volunteering in turn as a predictor of life satisfaction. I tested indirect effects with the 500 bootstrapping procedure in M*plus*. Finally, in the moderation analysis I included interaction terms to test for moderation effects. I created five interaction terms including each personality trait with volunteering using SPSS. Then I evaluated the moderation effects of personality and volunteering on life satisfaction after controlling for covariates.

In order to evaluate the models, I examined the fit of the models by evaluating the χ^2 values, comparative fit index (CFI), and the root mean square error of approximation (RMSEA). According to the guidelines for determining model fit (Hooper, Coughlan, & Mullen, 2008), the results of the χ^2 should not be significant. The value of CFI ≥ 0.95 indicates a good fit of the model to the data. The values of RMSEA should range between 0.05 and 0.10.

CHAPTER 4. RESULTS

Descriptive Statistics

As a first step, frequencies and descriptive analyses were computed for all variables in the model: life satisfaction, volunteerism (three forms of volunteerism), and the Big Five factors. Table 2 shows the descriptive statistics in detail. The results of descriptive statistics indicate that the mean level of life satisfaction among octogenarians and centenarians was generally high. The majority of the sample had volunteered sometime during their lifetime (88.9%), many of them still volunteered when they were in their 80s and 90s (40.4%), and the majority of the sample indicated that they were not currently volunteering (78.8%). The results of the Big Five factors of the oldest old adults indicate that octogenarians and centenarians in this sample were relatively high in extraversion, low in neuroticism, high in trust, high in competence, and somewhat low in ideas.

Table 2
Descriptive Statistics for Life Satisfaction, Volunteering, and Big Five Factors

	N	Frequency (*M*)	Minimum	Maximum	*SD*
Life satisfaction	206	1.79	-6	6	2.79
Ever volunteered	207				
Yes	184	88.9%			
No	23	11.1%			
Last volunteered	203				
Never	22	10.8%			
Age 30-64	18	8.7%			
Age 65-80	37	18.2%			
Age 81-99	82	40.4%			
Even today	44	21.7%			

(table continues)

Table 2 *continued*

	N	Frequency (*M*)	Minimum	Maximum	*SD*
Currently volunteering	208				
No	164	78.8%			
Yes	44	21.2%			
Big Five factors					
Extraversion	208	2.29	-11	11	4.29
Neuroticism	208	-7.42	-12	10	5.08
Trust	207	6.12	-6	8	2.27
Competence	206	5.52	-3	7	2.22
Ideas	205	-.93	-8	8	4.08
Total	208				

Note. Percentages may not add up to 100 because of rounding.

A 2 (Age) x 2 (Gender) x 2 (Ethnicity) analysis of variance was conducted to compare group differences on life satisfaction. The results of the analysis indicated that there were no significant differences on life satisfaction by age, F (1, 206) = 2.95, p = .09, gender, F (1, 206) = .32, p = .57, and ethnicity, F (1, 206) = 2.95, p = .09 (Tables not shown).

As a next step, χ^2 statistical tests were computed to examine gender, ethnicity, and age group differences in volunteering (all three types of volunteering). The χ^2 test on ever volunteered indicated that there were no gender differences, χ^2 (1) = .25, p = .62, no ethnicity differences, χ^2 (1) = .28, p = .77, and no age group differences, χ^2 (1) = .77, p = .49. (Tables 3 to 5).

Table 3

Gender Differences in Ever Volunteered

		Gender		Total
		Male	Female	
Ever Volunteered	No	7	16	23
		13.0%	10.5%	11.1%
	Yes	47	137	184
		87.0%	89.5%	88.9%
	Total	54	153	207
		100.0%	100.0%	100.0%

Table 4

Ethnicity Differences in Ever Volunteered

		Ethnicity		Total
		White/Caucasian	Black/African American	
Ever Volunteered	No	20	3	23
		11.6%	8.6%	11.1%
	Yes	152	32	184
		88.4%	91.4%	88.9%
	Total	172	35	207
		100.0%	100.0%	100.0%

Table 5

Age Group Differences in Ever Volunteered

		Age Category		Total
		Octogenarians	Centenarians	
Ever Volunteered	No	6	17	23
		8.5%	12.5%	11.1%
	Yes	65	119	184
		91.5%	87.5%	88.9%
	Total	71	136	207
		100.0%	100.0%	100.0%

The results on life span volunteering (last volunteered) suggest no gender, χ^2 (4) = 1.94, p = .75, or ethnicity differences in life span volunteering, χ^2 (4) = 3.22, p = .52 (Tables 6 and 7). The results of the crosstabulation demonstrate that about 43% of women last volunteered in their 80s and 90s, and about 34% of men last volunteered in their 80s and 90s. Table 7 delineates the results of the crosstabulation on ethnicity differences in life span volunteering (last volunteered), which indicate that there were no ethnicity differences in volunteer work over life span. About 42% of Black/African Americans last volunteered when they were 81 to 99 years of age, the highest percentage of all periods of the life span. Similarly, about 40% of White/Caucasians last volunteered when they were at ages 81to 99.

Table 6

Gender Differences in Life Span Volunteering

		Gender		Total
		Male	Female	
Volunteer work - When?	Never	7	15	22
		13.2%	10.0%	10.8%
	Age 30 - 64	5	13	18
		9.4%	8.7%	8.9%
	Age 65 - 80	9	28	37
		17.0%	18.7%	18.2%
	Age 81 - 99	18	64	82
		34.0%	42.7%	40.4%
	Even today	14	30	44
		26.4%	20.0%	21.7%
	Total	53	150	203
		100.0%	100.0%	100.0%

Note. Percentages may not add up to 100 because of rounding.

Table 7

Ethnicity Differences in Life Span Volunteering

		Ethnicity		Total
		White/ Caucasian	Black/African American	
Volunteer work - When?	Never	19	3	22
		11.2%	9.1%	10.8%
	Age 30 - 64	17	1	18
		10.0%	3.0%	8.9%
	Age 65 - 80	32	5	37
		18.8%	15.2%	18.2%
	Age 81 - 99	68	14	82
		40.0%	42.4%	40.4%
	Even today	34	10	44
		20.0%	30.3%	21.7%
	Total	170	33	203
		100.0%	100.0%	100.0%

The χ^2 test on age group by life span volunteering (last volunteered) was significant, χ^2 (4) = 38.55, $p < .001$. As shown in Table 8, the results suggest that about 38 % of octogenarians volunteered "even today," followed by volunteering last between 65 and 80 years of age. About 54% of centenarians volunteered when they were 81 to 99 years of age, followed by volunteering "even today." This signifies that the majority of oldest old adults actively volunteered up to the age of the 80s and 90s.

Table 8

Age Group Differences in Life Span Volunteering

		Age Category		Total
		Octogenarians	Centenarians	
Volunteer work - When?	Never	6	16	22
		8.5%	12.1%	10.8%
	Age 30 - 64	6	12	18
		8.5%	9.1%	8.9%
	Age 65 - 80	21	16	37
		29.6%	12.1%	18.2%
	Age 81 - 99	11	71	82
		15.5%	53.8%	40.4%
	Even today	27	17	44
		38.0%	12.9%	21.7%
	Total	71	132	203
		100.0%	100.0%	100.0%

The χ^2 test on currently volunteering indicated that there were no gender differences, χ^2 (1) = .83, p = .41, no ethnicity differences, χ^2 (1) = 1.39, p = .26, but there were age group differences, χ^2 (1) = 17.20, $p < .001$ (Tables 9 to 11). A larger percentage of octogenarians indicated that they were currently volunteering (38%) compared to centenarians (12.9%).

Table 9

Gender Differences in Currently Volunteering

		Gender		Total
		Male	Female	
Currently Volunteering	No	39	120	159
		73.6%	80.0%	78.3%
	Yes	14	30	44
		26.4%	20.0%	21.7%
	Total	53	150	203
		100.0%	100.0%	100.0%

Table 10

Ethnicity Differences in Currently Volunteering

		Ethnicity		Total
		White/Caucasian	Black/African American	
Currently Volunteering	No	136	23	159
		67.0%	69.7%	78.3%
	Yes	34	10	44
		20.0%	30.0%	21.7%
	Total	170	33	203
		100.0%	100.0%	100.0%

Table 11

Age Group Differences in Currently Volunteering

		Age Category		Total
		Octogenarians	Centenarians	
Currently Volunteering	No	44	115	159
		62.0%	87.1%	78.3%
	Yes	27	17	44
		38.0%	12.9%	21.7%
	Total	71	132	203
		100.0%	100.0%	100.0%

Correlations

Next, I examined bivariate correlations among all variables in the model. There were a number of significant associations among the variables. Life satisfaction was positively associated with extraversion, competence, and cognitive functioning and negatively associated with age in years and with neuroticism. Ever volunteered was positively associated with extraversion. Both, ever and last volunteered were positively associated with years of education. Currently volunteering was positively associated with MMSE, education and life satisfaction and negatively associated with age in years. Table 12 shows the correlations among all variables.

Hypothesized Model

Direct Effects

In assessing the hypothesized models, the direct model was tested as a first step. Three separate analyses were computed in order to analyze three different volunteering variables: "ever volunteered," "last volunteered," and "currently volunteering." The results of the direct effect of ever volunteered and Big Five factors on life satisfaction among octogenarians and centenarians indicated that extraversion was significantly and positively associated with life satisfaction, $\beta = 0.21$, $p = .02$ (Table 13). The result of the direct effect of last volunteered and Big Five factors on life satisfaction also indicated that extraversion of the Big Five factors was positively associated with life satisfaction among octogenarians and centenarians, $\beta = 0.21$, $p = .03$ (Table 14). Similarly, the results of the direct effect of currently volunteering and personality on life satisfaction indicated that extraversion significantly predicted life satisfaction, $\beta = 0.20$, $p = .03$ (Table 15).

Because "ever volunteered" and "currently volunteering" were categorical variables logistic regressions were computed in M*plus*. Educational attainment, cognitive function and competence significantly predicted ever volunteering (Table 16). As one unit of MMSE increased, participants were 27% more likely to have ever volunteered. As one unit of educational attainment increased, participants were 29% more likely to have ever volunteered. As one unit of competence increased, participants were 42% more likely to have ever volunteered. The results of the direct effect of personality on currently volunteering (Table 17) indicated that neither covariates nor the Big Five factors significantly predicted currently volunteering.

Table 12

Bivariate Correlations among Demographics, Volunteering, Personality Traits, and Life Satisfaction

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)
(1) Gender	-													
(2) Ethnicity	.04	-												
(3) Age in years	.19**	-.01	-											
(4) Cognition	-.11	-.12	-.50**	-										
(5) Education	-.07	-.22**	-.20**	.29**	-									
(6) Ever volunteered	.04	.04	-.04	.08	.25**	-								
(7) Last volunteered	.01	.09	-.05	.09	.18*	.74**	-							
(8) Extraversion	.08	.20**	-.14*	-.00	-.07	.07	.17*	-						
(9) Neuroticism	.13	.12	.12	-.25**	-.13	.04	.04	-.22**	-					
(10) Trust	.04	-.25**	.04	.21**	.10	.13	.08	.16*	-.25**	-				
(11) Competence	-.16*	.07	-.16*	.14*	.13	.12	.12	.28**	-.35**	.20**	-			
(12) Ideas	-.17*	-.05	-.21**	.18**	.31**	.03	.06	.10	.00	-.19**	.08	-		
(13) Life satisfaction	-.01	.10	-.14*	.14*	.08	.03	.04	.26**	-.20**	.01	.25**	.05	-	
(14) Currently volunteering	-.06	.08	-.33**	.25**	.15*	.18**	.63**	-.13	-.02	.00	.12	.11	.14*	-

Note. *$p < .05$. **$p < .01$. ***$p < .001$.

Table 13

Direct Effect of Ever Volunteered, Big Five Factors, and Covariates on Life Satisfaction

	B	*SE(B)*	β
Gender	-.09	.51	-.02
Ethnicity	.90	.59	.14
Age	-.02	.03	-.05
Cognitive Function	.11	.08	.14
Educational Attainment	.03	.06	.04
Ever volunteered	-.10	.72	-.01
Extraversion	.13	.07	.21*
Neuroticism	-.03	.05	-.06
Trust	-.09	.11	-.08
Competence	.22	.13	.16
Ideas	-.04	.06	-.06

Note. Gender (Male = 0), Ethnicity (White/Caucasian = 0), Ever volunteered (No = 0). $^{+}p < .10$. $*p < .05$.

Table 14

Direct Effect of Last Volunteered, Big Five Factors, and Covariates on Life Satisfaction

	B	*SE(B)*	β
Gender	-.09	.51	-.02
Ethnicity	.90	.59	.13
Age	-.02	.03	-.05
Cognitive Function	.11	.08	.14
Educational Attainment	.02	.06	.04
Last volunteered	-.01	.18	-.01
Extraversion	.13	.06	.21*
Neuroticism	-.03	.05	-.06
Trust	-.09	.11	-.08
Competence	.22	.13	.16^{+}
Ideas	-.04	.06	-.06

Note. Gender (Male = 0), Ethnicity (White/Caucasian = 0), Ever volunteered (No = 0). $^{+}p < .10$. *$p < .05$.

Table 15

Effect of Currently Volunteering, Big Five Factors, and Covariates on Life Satisfaction

	B	*SE(B)*	β
Gender	-.07	.50	-.01
Ethnicity	.78	.59	.12
Age	-.02	.03	-.05
Cognitive Function	.08	.08	.11
Educational Attainment	.01	.06	.02
Current Volunteering	.03	.50	.01
Extraversion	.12	.50	.20*
Neuroticism	-.05	.05	-.09
Trust	-.08	.11	-.07
Competence	.23	.13	.16^{+}
Ideas	-.03	.06	-.04

Note. Gender (Male = 0), Ethnicity (White/Caucasian = 0), Current volunteering (No = 0). $^{+}p < .10$. $*p < .05$.

Table 16

Direct Effect of Personality on Ever Volunteered

	B	*SE(B)*	Odds Ratio	β
Gender	0.64	0.74	1.90	0.12
Ethnicity	1.59	0.99	4.93	0.26
Age	0.07	0.51	1.07	0.22
Cognitive Function	0.24	0.11	1.27	0.34*
Educational Attainment	0.26	0.09	1.29	0.41*
Extraversion	-0.01	0.08	0.99	-0.12
Neuroticism	0.06	0.06	1.06	0.13
Trust	0.11	0.13	1.12	0.10
Competence	0.35	0.15	1.42	0.28*
Ideas	0.01	0.09	1.01	0.02

Note. Gender (Male = 0), Ethnicity (White/Caucasian = 0), Ever volunteered (No = 0). $^{+}p < .10$. $*p < .05$.

Table 17

Direct Effect of Personality on Currently Volunteering

	B	*SE(B)*	Odds Ratio	β
Gender	1.04	0.50	0.08	0.01
Ethnicity	2.29	1.26	1.03	0.16
Age	0.97	0.03	-1.05	-0.12
Cognitive Function	1.16	0.11	1.50	0.24
Educational Attainment	1.07	0.07	0.97	0.12
Extraversion	1.08	0.06	1.25	0.15
Neuroticism	1.02	0.05	0.39	0.05
Trust	0.96	0.11	-0.40	-0.05
Competence	1.18	0.17	1.03	0.15
Ideas	1.02	0.06	0.37	0.05

Note. Gender (Male = 0), Ethnicity (White/Caucasian = 0), Current volunteering (No = 0). $^{+}p < .10$. $*p < .05$.

Indirect Effects

Mediation effects were tested by conducting three separate analyses. The first analysis included the pathways from the Big Five factors on life satisfaction via "ever volunteered." The second analysis included the pathways from the Big Five factors on life satisfaction via "last volunteered." The third analysis included the pathways from the Big

Five factors on life satisfaction via "currently volunteering." For all of the analyses the 500 bootstrapping procedure was applied. The results of the indirect effect of the Big Five factors on life satisfaction via volunteering indicated that there was no significant mediating effect of volunteerism (i.e., ever volunteered, last volunteered, or currently volunteering) on the association between personality and life satisfaction. Table 18 shows the values of each indirect pathway from the Big Five factors to life satisfaction through volunteerism (three types of volunteering).

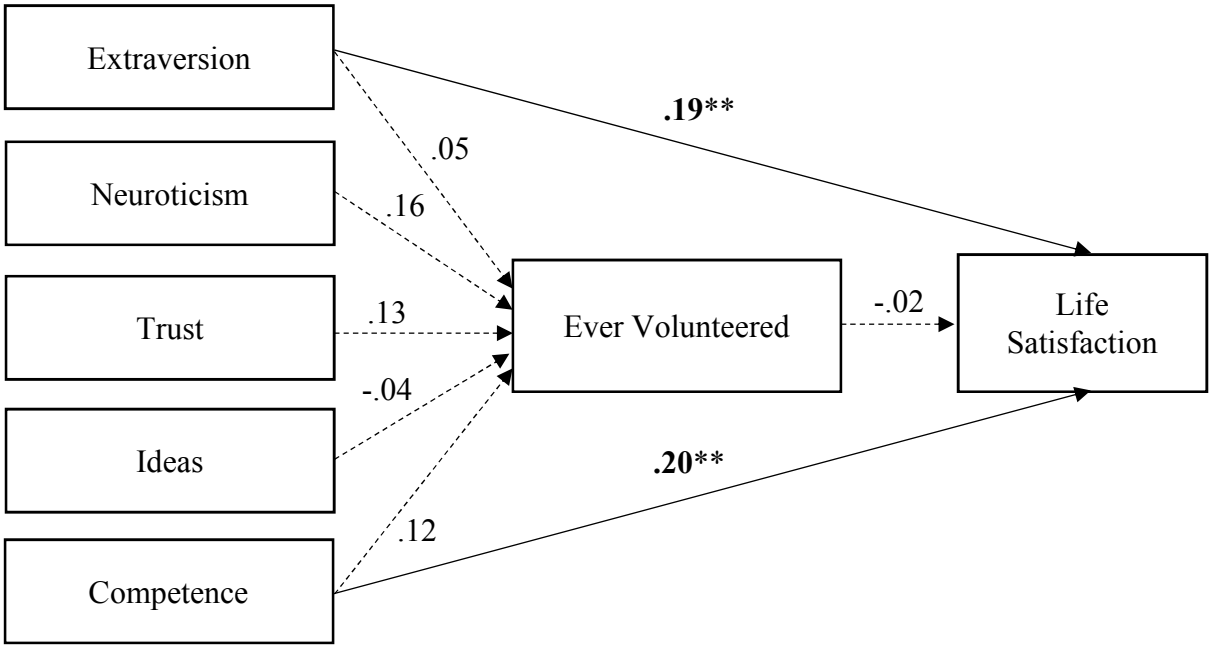
Table 18

Indirect Pathways from Personality to Volunteerism, and Volunteerism to Life Satisfaction

		β	S.E.	*p*-value	CI
Ever Volunteered					
	Extraversion to LS	.001	.011	.960	[-.189, .228]
	Neuroticism to LS	.003	.013	.798	[-.090, .258]
	Trust to LS	.003	.012	.828	[-.108, .255]
	Competence to LS	.008	.024	.329	[.013, .405]
	Ideas to LS	-.001	.010	.930	[-.214, .155]
Last Volunteered					
	Extraversion to LS	.011	.019	.579	[-.006, .378]
	Neuroticism to LS	.009	.017	.610	[-.022, .299]
	Trust to LS	-.001	.008	.907	[-.166, .121]
	Competence to LS	.010	.021	.640	[-.008, .369]
	Ideas to LS	-.003	.011	.792	[-.242, .130]
Currently Volunteering					
	Extraversion to LS	.007	.010	.506	[-.066, .226]
	Neuroticism to LS	.005	.009	.556	[-.091, .208]
	Trust to LS	.000	.008	.976	[-.147, .138]
	Competence to LS	.007	.010	.509	[-.084, .210]
	Ideas to LS	.000	.009	.999	[-.213, .187]

Note. LS = Life Satisfaction; CI = Confidence Interval, bias corrected effects

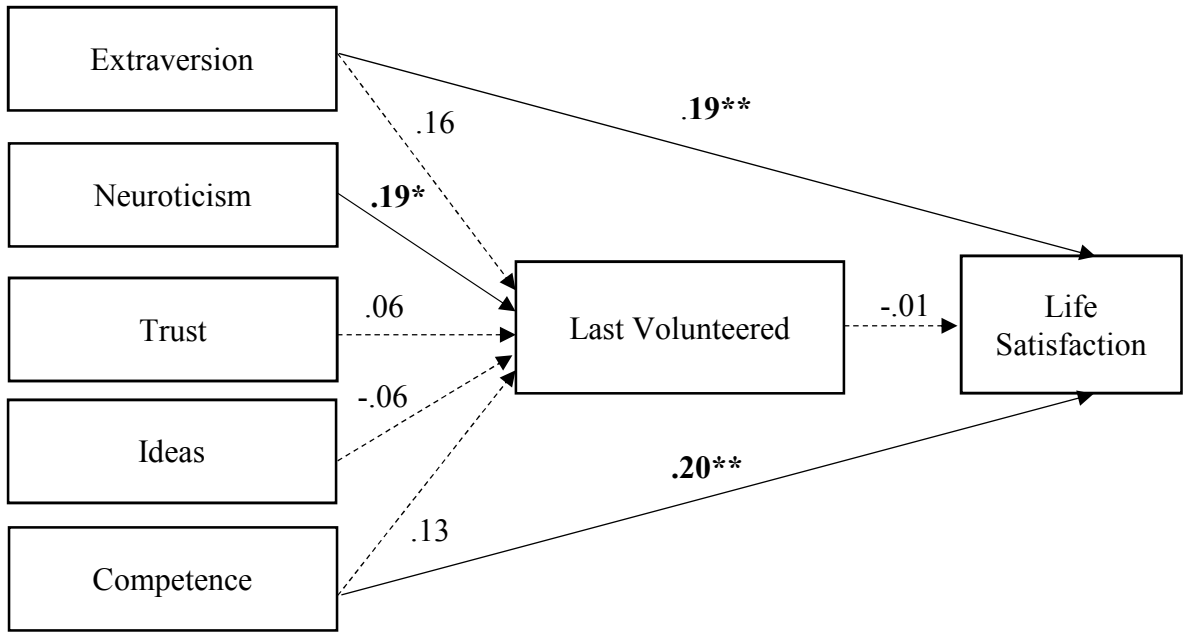
In addition to the analyses on indirect effects, analyses were conducted to examine the entire model shown in Figures 5 to 7. As indicated in the previous section, the fully mediated model included all the Big Five factors to predict life satisfaction via ever/last volunteered. In the additional analyses, direct pathways from extraversion and competence were freed.



χ^2 (3) = 3.27, p = .35, *CFI* = .99, *RMSEA* = .02.

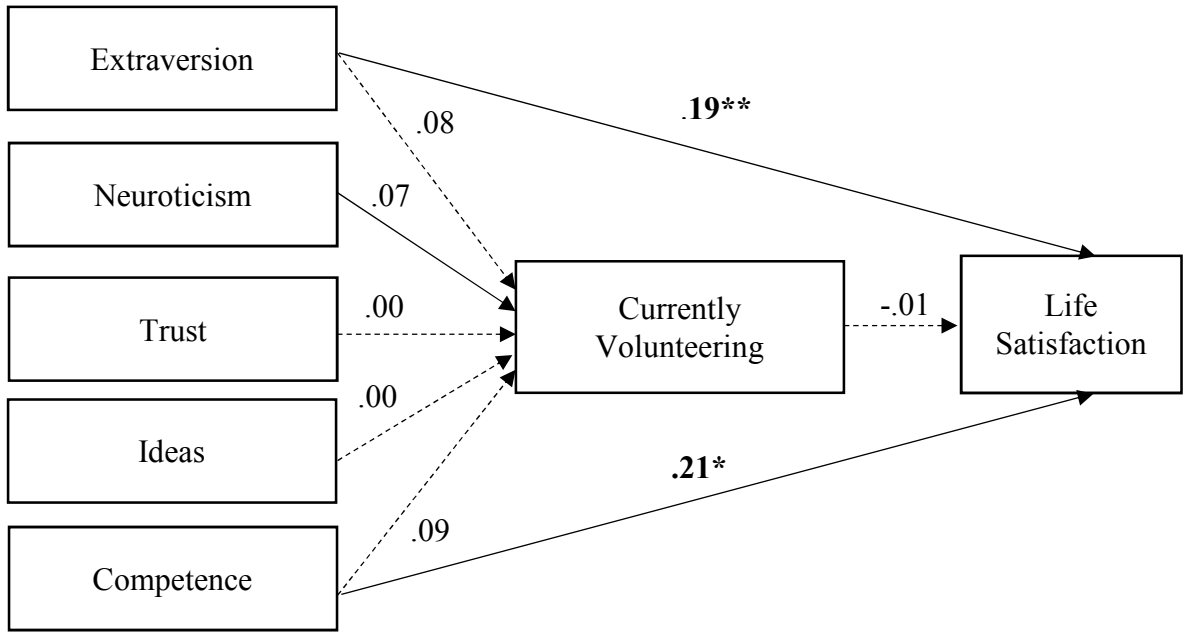
Figure 5. *Indirect model with ever volunteered item.*

The model fit of the fully mediated model including ever volunteered was, χ^2 (5) = 21.30, $p < .001$, CFI = .56, RMSEA = .13. The model fit improved with the inclusion of direct pathways from extraversion and competence to life satisfaction, χ^2 (3) = 3.27, p = .35, CFI = .99, RMSEA = .02. Extraversion and competence had a significant direct effect on life satisfaction. The χ^2 difference between the restricted and modified model was $\Delta\chi^2$ (2) = 18.03, which indicates that there was a significant improvement when adding two direct paths from extraversion and competence to life satisfaction.



χ^2 (3) = 3.28, *p* =, *CFI* = .99, *RMSEA* = .02.

Figure 6. *Indirect model with last volunteered item.*



χ^2 (3) = 3.92, *p* =.35, *CFI* = .98, *RMSEA* = .04.

Figure 7. *Indirect model with currently volunteering item.*

The results for last volunteered showed a similar pattern. The model fit of fully mediated model was, χ^2 (5) = 21.20, $p < .001$, CFI = .55, RMSEA = .13. The model fit improved after freeing the direct pathway from extraversion and competence to life satisfaction, χ^2 (3) = 3.28, p =.35, CFI = .99, RMSEA = .02. Extraversion and competence significantly predicted life satisfaction. The χ^2 difference between the restricted and modified model was $\Delta\chi^2$ (2) = 17.92, indicating that the model significantly improved after adding the two paths from extraversion and competence to life satisfaction. In addition, when allowing the direct effects of extraversion and competence on life satisfaction in the mediation model, there were significant effects from neuroticism to last volunteered, $\beta = .19$, $p < .05$, as shown in Figure 6.

The results of currently volunteering indicated that the model fit of the fully mediated model was, χ^2 (5) = 22.56, $p < .001$, CFI = .61, RMSEA = .13. When freeing the path from extraversion and competence to life satisfaction, the model fit very well, χ^2 (3) = 3.92, p =.35, CFI = .98, RMSEA = .04. The χ^2 difference between the restricted and modified model was $\Delta\chi^2$ (2) = 18.64, indicating that the model significantly improved when adding the two paths of extraversion and competence to life satisfaction.

Moderation

Moderation effects of the hypothesized model were tested by creating five interaction terms with "ever volunteered" and additional five interaction terms with "last volunteered." Ten separate analyses were conducted in order to examine each moderation effect of five personality traits with two volunteering variables on life satisfaction. Extraversion, neuroticism, trust, competence, idea, and last volunteered variables were mean centered in the analyses. The results of the moderation effect for the hypothesized model were

nonsignificant for all 10 interaction terms of the Big Five factors and ever volunteered, and Big Five factors and last volunteered on life satisfaction. However, there was a significant moderation effect of extraversion by currently volunteering on life satisfaction.

Table 19

Moderation of Big Five Factors and Volunteerism on Life Satisfaction

	B	*SE*(*B*)	β	Sig. (*p*)
Extraversion*Ever Volunteered	.03	.14	.04	.86
Neuroticism*Ever Volunteered	-.19	.14	-.33	.16
Trust*Ever Volunteered	.42	.30	.33	.15
Competence*Ever Volunteered	.12	.38	.08	.75
Ideas*Ever Volunteered	.17	.20	.27	.38
Extraversion*Last Volunteered	-.01	.04	-.02	.84
Neuroticism*Last Volunteered	-.04	.04	-.11	.21
Trust*Last Volunteered	.14	.08	.15	.08
Competence*Last Volunteered	.03	.09	.03	.76
Ideas*Last Volunteered	-.00	.04	-.01	.93
Extraversion*Currently Volunteering	-.29	.12	-.25*	.02
Neuroticism*Currently Volunteering	-.09	.12	-.07	.48
Trust*Currently Volunteering	.35	.25	.14	.16
Competence*Currently Volunteering	-.31	.29	-.11	.29
Ideas*Currently Volunteering	-.05	.12	-.04	.68

The graphical representation of the interaction is depicted in Figure 8. Individuals with high levels of extraversion did not differ in their level of life satisfaction regardless of volunteering activities. However, for individuals low in extraversion volunteering mattered: individuals who did not currently volunteer and who were low in extraversion had lower

levels of life satisfaction when compared to those who were relatively low in extraversion and who currently volunteered. In short, the moderation effect of extraversion by volunteerism seems to be significant for life satisfaction only when oldest old adults currently participated in volunteering, and not by having past experiences of volunteering.

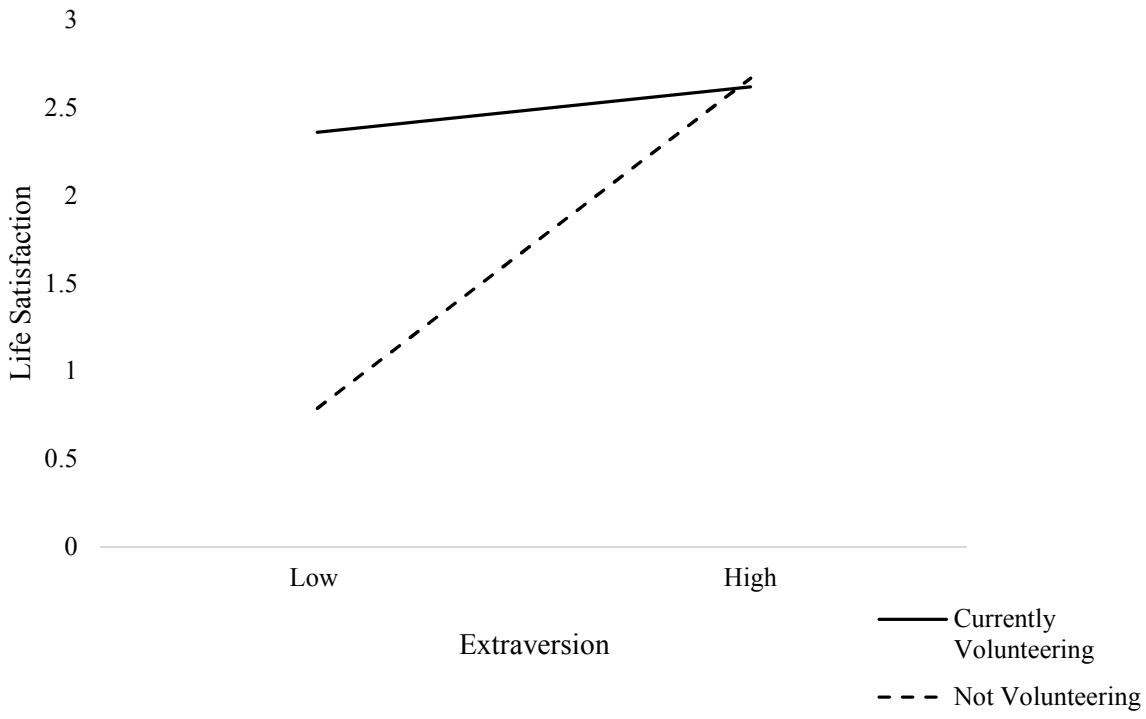


Figure 8. Moderation effects of extraversion by currently volunteering on life satisfaction.

CHAPTER 5. DISCUSSION

Volunteerism and personality have positive effects on psychological well-being of older adults (Baek et al., 2016; Greenfield & Marks, 2004; Morrow-Howell, 2010; Smith & Ryan, 2016; Wilson, 2000). However, only a few studies have been conducted on the well-being of the oldest old population, assessing the effect of volunteering activities and personality on their psychological well-being. In order to fill this gap, the current thesis conducted analyses that examined the effects of volunteerism and the Big Five factors on octogenarians' and centenarians' life satisfaction. By including a life-span perspective of volunteerism, the current study further examined the role of volunteerism from a broader perspective. To the best of my knowledge, no studies have been conducted asking questions about volunteerism from a life-span perspective, measuring how long older adults have volunteered in their lifetime. The Georgia Centenarian Study includes a life-span volunteerism variable which may fill the gap of research on volunteerism. Taking this measure on volunteerism from a different viewpoint, I asked questions about how centenarians' life satisfaction was influenced by the last time point they had volunteered in life.

The descriptive results and mean group differences inform about two major findings concerning the relative frequency of volunteering among octogenarians and centenarians and about significant age group differences on volunteerism. The majority, about 80% of the sample, responded that they had volunteered sometime in their lives. More than half among the oldest old adults who said that they had ever volunteered responded that they last volunteered when they were/are 81-99 years old. In addition, about 80% of the sample responded that they were not currently volunteering. This result signifies that the majority of

octogenarians and centenarians had volunteered until they reached their 80s and 90s but did not volunteer when they reached 100 years of age. In conclusion, the results suggest the timing of volunteerism for octogenarians and centenarians are closely related, even though their causal relationships are not validated.

Taking a step further, the results indicate that there were significant differences between octogenarian and centenarian group on when they had last volunteered and whether they were currently volunteering. Even though both octogenarians and centenarians volunteered in their 80s, relatively more centenarians had last volunteered when they were in their 80s, but relatively more octogenarians indicated that they were currently volunteering. To my knowledge, no studies have been reported regarding age group differences between octogenarians and centenarians on volunteering, and this is first time to compare age group differences between octogenarians and centenarians.

Typically, research links volunteerism to retirement in order to explain age group differences in benefits or motivation to volunteer by comparing those who retired and those who are employed. For example, exchange theory presumes that older adults who retired volunteer in order to replace their former jobs, which denotes higher rates of volunteering for older adults compared to younger adults. However, most of our sample was retired and such explanations do not fit our sample. One possible reason for significant age group differences on volunteering may be due to the positive effect of volunteering on well-being, which leads to longevity (Greenfield & Marks, 2004; Musick et al., 1999). In agreement with other studies (Musick et al., 1999; Shmotkin & Blumstein, 2003), the results perhaps reflect the findings that participating in volunteer activities acts as a protective factor for mortality, or supports the assumption that volunteering can be proxy for staying active. Another possible

reason may be due to cohort effects. Octogenarians and centenarians were born in different years which make them belong to different cohort groups. Cohort effects, however, can only be evaluated when careful sequential studies are conducted. Another possible reason for the finding is the effect of longer duration of participation in volunteerism over the life span. Centenarians have perhaps more opportunities to participate in volunteering over life span compared to octogenarians, which potentially influenced the significant age group differences.

There were no significant gender and ethnicity differences on all types of volunteerism. Even though there were no specific hypotheses concerning gender and ethnicity differences, the results were unexpected because the literature in general suggests that women and White/Caucasian are more likely to volunteer compared to their counterparts (Manning, 2010; Mesch, Rooney, Steinberg, & Denton, 2006; Wilson, 2000). Presumably, the small sample size of men and Black/African Americans influenced the results.

According to the correlational results, extraversion and competence were positively associated with life satisfaction among oldest old adults, and neuroticism had a negative association with life satisfaction. This finding is supported by the literature (Roberts et al., 2007; Schimmack, Oishi, Furr, & Funder, 2004), which generally states that those who score high on extraversion, conscientiousness, agreeableness, and openness, and low in neuroticism (or high in emotional stability) are more likely to have higher level of life satisfaction. Schimmack et al. examined personality and life satisfaction within a facet-level analysis. Their findings suggest that facets of extraversion and neuroticism strongly explain the variance in life satisfaction. According to Ozer and Benet-Martinez (2006), extraversion and neuroticism are strongly linked to subjective well-being, whereas agreeableness,

conscientiousness, and openness may be inconsistently linked to subjective well-being due to environmental influences. In other words, these three personality traits are activated to make oneself happy or satisfied only when there is a reward in the environment. This perhaps can explain why agreeableness and openness were not significantly associated with life satisfaction in this study. Volunteerism and extraversion were significantly associated, which was in line with the literature (Ozer & Benet-Martinez, 2006) that extraversion predicts volunteerism and community involvement. Currently volunteering was positively associated with cognitive function, education and life satisfaction and negatively associated with age, which indicates that cognitive functioning is very important for oldest old adults to participate in volunteerism. Cognitive functioning and volunteerism can affect each other bidirectionally, indicating that volunteerism can promote cognitive health (Guiney & Machado, 2017), and cognitive functioning can act as a resource leading to continued volunteering among older adults (Shmotkin, Blumstein & Modan, 2003).

There is also evidence that currently volunteering status is associated with younger age. However, it is noteworthy that younger age in this sample refers to octogenarians. Octogenarians compared to centenarians are more likely to be physically and cognitively healthy. Furthermore, there may also be cohort differences which may influence participation in volunteerism.

Applying the "volunteer personality model" (Thoits & Hewitt, 2001), the current study assumed that certain dispositional qualities or personality traits motivate one to participate in volunteering. For example, Baek et al. (2016) found that that high extraversion, high openness to experience, high agreeableness, and high conscientiousness were associated with volunteerism using the GCS study. In addition, Martin et al. (2009) examined the

moderation effect of volunteerism (engaged lifestyle) and the Big Five factors on cognitive function among centenarians from the GCS. Their findings also indicated that the centenarians' emotional stability, extraversion, agreeableness, and openness significantly moderated the association between volunteerism and cognitive function.

In line with the evidence from other studies, I posed three hypotheses based on three separate models: a direct effect, an indirect effect, and moderation effect model. The direct effect hypothesis stated that those who were high in extraversion, emotional stability, agreeableness, conscientiousness, openness, and those who volunteered would be more satisfied in very late life. The second hypothesis stated that volunteerism would positively mediate between extraversion, openness, agreeableness, conscientiousness and life satisfaction. The last hypothesis on moderation effects stated that the relationship between volunteering and life satisfaction would only be significant for extraverted, open, agreeable, conscientious, and emotionally stable individuals.

The hypothesis on the direct effect was partially supported by the analysis. Only extraversion and competence were significantly associated with life satisfaction. The effect of extraversion and competence were consistent with the literature, which suggest that those who score high on extraversion and conscientiousness are more likely to score higher on overall well-being and mental health (Baek et al., 2016; Martin et al., 2009). Those high in extraversion would more likely be outgoing, which would lead them to have more social support and to have higher life satisfaction. Those high in competence would feel that they are competent in what they do, which would make them feel confident and proud. These feelings then would prompt higher life satisfaction among oldest old adults. In fact, one of the item measuring competence is "I pride myself on my sound judgment."

However, the results are unexpected because volunteerism, extraversion and neuroticism are strongly related to life satisfaction in other studies (Steel et al., 2008; Thoits & Hewitt, 2001). The possible reason that neuroticism, or emotional stability, was not significantly related to life satisfaction may be due to the characteristics of the sample in the Georgia Centenarian Study. Centenarians and octogenarians from the GCS are characterized by low levels of neuroticism and high levels of extraversion. According to Sun, Kaufman, and Smillie (2018), the effect of agreeableness, openness, and conscientiousness have weaker effects on subjective well-being, or life satisfaction, which also explain the possible reason for nonsignificant effects of trust and ideas on life satisfaction. Even though Sun et al.'s findings included conscientiousness as one of the weaker predictors, it probably operates differentially among the oldest old adults.

Another additional finding from the results of the mediation models indicated that neuroticism had a direct effect on last volunteered, indicating that those who scored high on neuroticism were more likely to have volunteered until a later time point of their life span. However, this result was unexpected because there were no significant correlations between neuroticism and when participants last volunteered. Also, there is no literature to support the direct effect of neuroticism on when participants last volunteered. The results may point to a possible suppressor effect. Those who are high in neuroticism are too anxious to volunteer and feel like time is running out as they want to contribute to the community. Moreover, individuals with high levels in neuroticism may be more likely to recall volunteer activities at later times of the life span.

The results of the mediation model did not support the hypothesis that volunteerism would positively mediate between extraversion, openness, agreeableness, conscientiousness

and life satisfaction. In general, the literature has demonstrated that those who are high in extraversion and agreeableness are more likely to participate in volunteerism (Carlo et al., 2005; Ozer & Benet-Martinez, 2006). The nonsignificant mediation effect in this study is perhaps due to the age of the sample belonging to the oldest old population who had long been retired so that their personality traits did not necessarily lead to volunteerism. Retired older adults participate in volunteerism in order to fulfill their meaning of life after retirement by engaging in productive activities (Hao, 2008). Another possible reason may be that octogenarians and centenarians have different levels of health status, instead of psychological resources, to participate in volunteerism (Thoits & Hewitt, 2001).

One additional finding from testing the entire mediation model indicated that educational attainment significantly predicted both "ever volunteered" and "last volunteered." The larger effect of educational attainment compared to personality traits may also be the reason why Big Five factors did not significantly predict volunteering in the model. The correlational results also indicate that educational attainment and volunteerism were significantly associated. There is evidence that volunteers are likely to have more education compared to their counterparts (King et al., 2014; Morrow-Howell et al., 2003).

The hypotheses on moderation of ever volunteered and last volunteered on life satisfaction, moderated by personality, were not supported by the results. None of the personality traits had a moderation effect on the relationship between ever volunteered or last volunteered and life satisfaction, which did not support the findings from the centenarian study testing the moderation effect of personality traits of Big Five factors on the relationship between volunteerism and cognitive function (Martin et al., 2009). However, there were moderation effects of extraversion by currently volunteering on life satisfaction. For those

high in extraversion the levels of life satisfaction were consistent, whether an individual currently volunteered or not. On the other hand, for those low in extraversion, the levels of life satisfaction differed by whether a person currently volunteered or not. This moderation effect of extraversion by volunteerism displays differential effects on life satisfaction when comparing between different types of volunteerism (ever volunteered, last volunteered, and currently volunteering). Only currently volunteering status was positively associated with life satisfaction among extraverted oldest old adults. As the results signify, the experience of volunteerism in the past does not have an impact on current life satisfaction. This sheds light on the effect of volunteerism from a life span perspective that volunteerism may only have proximal benefits to oldest old adults' life satisfaction. However, the findings reported by Martin and his colleagues including cognitive functioning as an outcome may be theoretically more relevant than the current hypothesis including life satisfaction as an outcome. Perhaps volunteering has more of a beneficial effect on cognitive function than on life satisfaction.

In conclusion, the current study explored the relationships between volunteerism, personality and life satisfaction among oldest old adults by testing a direct, indirect, and moderation effects of volunteerism and personality on life satisfaction. The findings of the study indicated that extraversion had a significant direct effect on life satisfaction, and a significant moderation effect of extraversion by currently volunteering on life satisfaction among octogenarians and centenarians. One important and novel analysis included in the current study was to test the volunteerism variable from a life span perspective. As indicated previously, no other studies to my knowledge have examined the effect of the last time when participants volunteered on psychological well-being. Even though there were no differences

between volunteering experience (ever volunteered or not) and last volunteered (how long oldest old adults were involved in volunteering), it is as important to know that there are no differences.

Limitations and Future Directions

There are several limitations to address in the current study. First, due to the highly selective sample of survivors, octogenarians and centenarians, the sample size is relatively small. The small sample size may have prevented a true significant effect of personality and volunteerism on life satisfaction. Also, due to the small size of the sample, the results of the study cannot be generalized to other age groups or regions. Second, there are not many studies about personality and volunteerism of centenarians in the literature, which makes it difficult to support or explain the findings from the current study. Third, personality and volunteerism were not ideally measured. Personality traits of agreeableness, conscientiousness, and openness were replaced by single facets. All of the measures of Big Five factors (Costa & McRae, 1992) were measured using a short version considering the participants' age and their fatigue status. In addition, the volunteering measurement which took a life span perspective is a retrospective measurement. Octogenarians and centenarians may not have accurately answered this volunteering measure due to their different levels of memory functioning. Fourth, other factors such as health conditions or functional limitations may explain more variance of life satisfaction among oldest old adults, rather than personality traits or volunteerism.

However, these limitations could also serve as a strength of the current study. This study with the unique sample fills a gap in the literature that explores the relationship between volunteerism, personality, and life satisfaction among octogenarians and

centenarians, with a unique measurement of volunteerism. Such limitations are helpful for future studies to be replicated, to better understand and fill gaps in the literature.

Addressing the limitations, I suggest a number of future plans and recommendations. The current study used self-reported data of octogenarians and centenarians. However, the Georgia Centenarian Study also has proxy data which can further enrich the study of personality, volunteerism, and life satisfaction of oldest old adults by comparing proxy data with self-reported data. In addition, as indicated in the limitations section, future studies should assess volunteerism in longitudinal designs instead of using retrospective measurement. Perhaps the results of longitudinal studies would yield different findings. Furthermore, other measures of psychological well-being, such as positive affect, depression, and loneliness should be examined in future studies. It will be meaningful to uncover the effect of volunteerism and personality on different aspects of psychological well-being of octogenarians and centenarians, considering that there is a lack of studies on the oldest old population.

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APPENDIX. IRB APPROVAL

IOWA STATE UNIVERSITY

Study

Study:	XX-026	**Sponsor(s):**	FED - NIH - National Institute on Aging
Committee:	IRB #1	**Sponsor Id:**	
Category:		**Grants:**	
Department:	Human Development and Family Studies		
Agent Types:	SBER	**CRO:**	
Title:	Resources and Adaptation in Centenarians	**Year:**	2000
2018 Common Rule Date:	09/20/2019	**HIPAA:**	No
Expedited Categories:	8c - The remaining research activities are limited to data analysis.	**FDA Study:**	No
Comments:			

Study-Site

Site(s):	**00 - Unspecified**	**PI:**	**Martin, Peter**
Status:	Active	**Additional:**	N
Approval:	October 4, 2019	**Expiration:**	N/A
Initial Approval:	October 5, 2010	**Other Expirations:**	Non-Exempt Approval Expiration - 10/02/2022
Tags:	Federally Funded		
Comments:			

Study-Site Contacts (2)

Name	Role
Kim, Joseph	Research Staff
Lee, Gina	Research Staff

Reference xForms (1)

Form	Identifier	Stage	As Of	Ref Active	Inactivated
IRB Application	Modification Resourced and Adaptation in Centenarians	Complete	10/04/2019 9:07:18 AM ET	10/04/2019 9:07:17 AM ET	

Events (20)

Event	Att	FE	Instance/UDF	Start	Complete	Last Mtg
Modification	1		Personnel Change	10/04/2019	10/15/2019	10/15/2019
Continuing Review	1		Transition	09/20/2019	10/01/2019	10/01/2019
Modification	1		Personnel Change	03/27/2019	04/16/2019	04/16/2019
Continuing Review	1			09/19/2018	10/02/2018	10/02/2018